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MAY 1957

# AGRICULTURAL MARKETING

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- Posting auction markets
- Marketing costs for lambs
- Food consumption in the South



U. S. DEPARTMENT OF AGRICULTURE • AGRICULTURAL MARKETING SERVICE

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### Cover

The livestock auctioneer on our cover page is Mr. Jack Zulch, a native Texan. Our informant tells us that the town of North Zulch, Texas, was named for his grandfather. While the story, "Livestock—To the Highest Bidder," appearing on pages 8 and 9, has no further background on Mr. Zulch, readers will find this timely article on auction selling and buying of livestock of special interest. By the end of June 1957, more than 500 livestock auctions will be displaying notices that they are subject to the Packers and Stockyards Act. The author, Mr. Sinclair, is Chief of the Packers and Stockyards Branch, Livestock Division, AMS.

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**Editor (acting) Milton Hoffman; assistant editor, Jeanne Starr Park**

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## Lord Delaware meets Mr. Moo

By John C. Baker

**L**ORD Delaware and Mr. Moo, whose careers were 350 years apart, will get together during June to tell the public that "June's Best Food Buys Are Dairy Foods." The agency that brings them together is the Sponsor Committee for June Dairy Month, representing the promotional efforts of the entire dairy industry.

While the rest of America pays a 350th anniversary tribute to Lord Delaware as Governor of Jamestown Colony, the dairy industry will salute him as founder of America's dairy industry, responsible for importing dairy cattle by the shipload in order that America's first successful white settlement should have plenty of milk, "which is of great nourishment and refreshing to our people."

**H**is Lordship's running mate during June Dairy Month is Mr. Moo, a happy cartoon character, who has sparked the commercial announcements of the American Dairy Association on the Disneyland television series. Mr. Moo, smiling from the gondola of a brightly colored balloon, will appear in June Dairy Month ads in newspapers of 80 cities and in leading magazines.

Mr. Moo also will beam from signs, posters, banners, and other display material in food stores; and from table mats and menus in restaurants.

Mr. Moo's efforts on behalf of his beloved dairy products will be multiplied several-fold during June. ADA's advertising will stress such things as waffles à la mode, cheese cake pie, cereals and cream, daffy-down-dilly pudding, cheese and crackers, and soup shakes. The advertising of five cooperating food corporations during June will feature the same items.

Supporting these nationwide campaigns of advertising and promotion will be State and local June Dairy Month programs, by dairy farmer groups in local markets, the State units of the American Dairy Association, and individual distributors and processors. The U. S. Department of Agriculture will also cooperate, giving June Dairy Month the full support of its plentiful foods program. There will be Dairy Princesses, Dairy Days, parades, festivals, proclamations by mayors and governors.

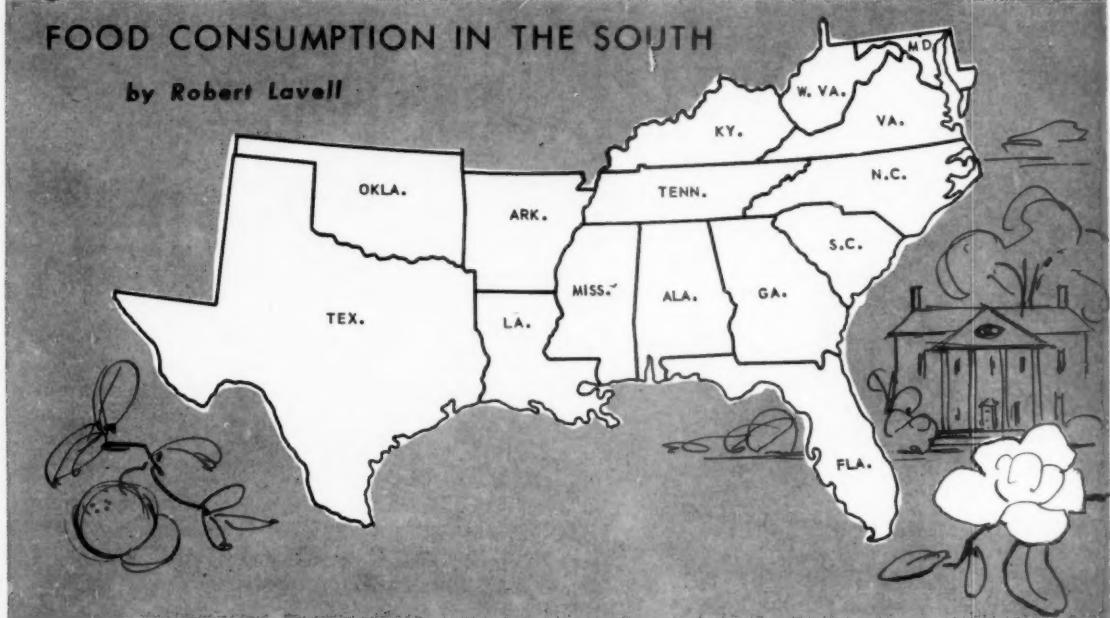
By means of newspapers and magazines, radio and television, homemakers will be reminded of the nutritional values of milk and its products, with suggestions of appetizing ways of serving dairy foods during June and the other 11 months of the year.

The June Dairy Month campaign is conducted each year by the dairy industry. All segments participate, from the farmers who produce the milk to those who sell milk and its products directly to consumers.

The Sponsor Committee is headquartered at the American Dairy Association in Chicago, the promotion arm of the Nation's dairy farmers. In addition to ADA, dairy organizations sponsoring June Dairy Month are: American Butter Institute, American Dry Milk Institute, Dairy Association Executives, Dairy Industries' Supply Association, Evaporated Milk Association, International Association of Ice Cream Manufacturers, Milk Industry Foundation, National Cheese Institute, National Creameries Association, National Dairy Council, National Milk Producers Federation, and Purebred Dairy Cattle Association.

## FOOD CONSUMPTION IN THE SOUTH

by Robert Lavell



**T**HE RATE of economic expansion in the South—from Delaware to Texas—during the past two decades has outpaced all other regions in the United States. The speed with which the South is catching up with the rest of the country has created some of the fastest growing food markets in the country.

Biggest changes thus far have come from rising per capita income, which went up more than 300 percent between 1935-36 and 1955. Per capita income in the rest of the country rose about 230 percent.

Another important change during this period has been the shift of population from rural to urban areas as a large number of the labor force moved from farms to industrial plants. The proportion of farm households dropped from 40 to 17 percent, and urban households went up from 37 to 49 percent. Both changes were greater than for the rest of the U. S.

To the author and other AMS economists, the bright outlook for the South means important new outlets for the commercial food industry. This basic trend is shown by a study of the results of a survey, made jointly by AMS and ARS, on food consumption of households in the South.

The survey provides evidence that food habits in the South are changing, and spending for family food is increasing. The greater dollar outlay for food has come with the growth of industry, rising income, and the movement of workers from farms to cities—all at a faster rate than any other region.

This phenomenal growth has not yet brought the South up to the national level of spending for food. The region accounts for only a fourth of the U. S. food market, although nearly a third of the population lives there. Low spending in the past years grew out of limited availability of some foods, inadequate marketing facilities, and relatively unfavorable economic conditions.

But the main reasons why food expenditures are still lower in the South are lower average money income, higher proportion of farm and rural nonfarm families, greater home production of family food.

The average family in the South spends less for food because its money income is lower. This reflects, in part, the large proportion of farm and rural nonfarm families. Even urban families in the South generally have lower money incomes than in the rest of the U. S.

The widespread practice of producing food at home, especially among rural or farm families, also tended to cut average spending for food in the whole region. But as migration from farms continues, home production will decrease in importance.

Home production made up about half the value of all food used by farm households in lower income groups and a little more than a third of the value of food for those with money income of more than \$6,000. Rural nonfarm families produced about a tenth of all food they used at home. Vegetables, eggs, chickens, and milk were items most commonly produced.

**Choices of food and main items** in the diet of families in the South vary among farm, urban, and rural nonfarm groups. Other differences are noted between the South and other regions. But the most interesting comparison can be made with the North Central region.

These two regions have large farm populations, and the North Central has developed food consumption patterns toward which the South appears to be moving.

Rural nonfarm families in middle-income groups in both regions used about as much fluid whole milk per person as did urban households. But the level of use was generally lower in the South. Farm families in both regions consumed much more milk than non-farm. Larger supplies came from home production.

Although the use of fluid whole milk in the South was lower than in the North Central States, the difference became less in urban families in higher income groups. Rates for urban households in the \$8,000-10,000 group were about the same in both regions.

All income groups in the South consumed a great deal more buttermilk and condensed and evaporated milk. This may be due, in part, to more home baking. But other influences are limited supplies and higher prices of fresh milk, lack of refrigeration, and lags in the adjustment of food habits to relatively recent increases in income and changes in urbanization.

More flour purchased as such was used in each income group by the urban South than by urban North Central families up to the \$8,000-10,000 income group. However, Southern families used less prepared mixes. Bread and other baked goods also were used to a lesser extent.

But sugar, syrup, eggs, and fats (purchased as such but not including those in baked goods or other prepared foods) were consumed in large quantities by all income levels in the South.

Urban households in both regions used much more frozen vegetables than did rural. Consumption of fresh fruits varied little among families in the North Central region or the South.

Processed fruit was highest for urban and lowest for farm families in both regions.

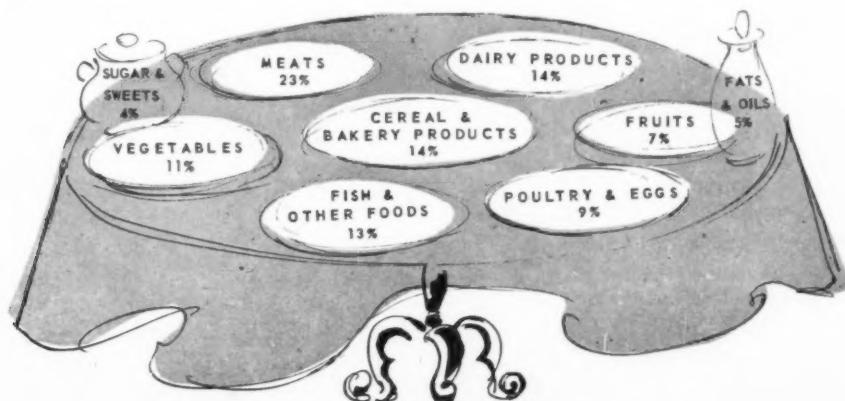
Use of fresh vegetables increased with income in both regions. Southern urban families in most income groups, however, used more fresh vegetables but less potatoes and processed vegetables than urban North Central families. Consumption of fresh fruits increased with income to the \$8,000-10,000 level; frozen concentrates had an even sharper income relationship.

Use of commercially canned fruits rose with income across the whole range of income groups. Canned fruit juices also followed incomes, but only up to the middle brackets, then leveled off.

Farm and rural nonfarm households in the South consumed about the same amounts of meat, poultry, and fish—the urban rate was slightly lower. Farm households produced half of what they consumed.

**Southern families ate less beef** but more chicken than those in the North Central region. Urban and rural nonfarm families in the South ate more pork. But farm families in the South generally ate less pork than farm families of comparable money income in the North Central States.

As for the future, trends indicate that food consumption patterns of the South will probably grow more and more like those of the North Central region. Further industrial development accompanied by higher incomes, a continuation of the shift from farms, and larger total population are all predicted for the South. Increased food outlay per person and the general increase in population there will bring about tremendous expansion in the food markets.



Shares of food expenditures for home use during one week in the spring of 1955—Southern region.

# Milk for SUMMER CAMPS



IN THE GOOD OLE SUMMERTIME

THE good old summertime—this year—is going to see a new development in milk marketing. The special milk program, administered nationally by Agricultural Marketing Service, will be made available to a new group of eligibles—to "summer camps."

All kinds of activities will be included:

- Boys' and girls' clubs,
- Boy Scout, Girl Scout, and Sea Scout camps,
- Child guidance centers and young people's leagues,
- Summer schools,
- Fresh-air camps, 4-H Club camps, day care camps, and camps for underprivileged children,
- Youth groups sponsored by civic organizations and service clubs,
- Summer camps sponsored by churches,
- Summer recreational programs sponsored by parent-teacher associations and by community clubs,
- Recreational programs of city and town parks and playgrounds, and
- Community house recreation programs.

Because of the wide variety of eligible participants, many ways of increasing milk consumption by children will be developed this summer. The program pro-

vides institutions and camps with new opportunities for improving the diets of children by serving more milk without materially increasing overall food costs. Some of the ways to increase milk consumption are:

- "Milk breaks" can be started.
- Milk can be served at an additional meal—a third meal, for example, if it is now being served at two.
- Extra fluid whole milk can be served at meals—many children will drink more than the usual one half-pint.
- An afternoon or evening pickup snack that includes milk can be begun.
- Fluid whole milk can be substituted for reconstituted nonfat dry milk in beverages and in cooking.
- Milk service can be inaugurated in programs which previously had not provided children with servings of fluid whole milk.

Agricultural Marketing Service helps in this program by reimbursing the participating camps for a part of the cost of all extra milk served to the children.

The special milk program was started two years ago to help reduce the surplus of milk production by increasing the consumption of milk by children in schools. In its first two years, it demonstrated that school milk consumption could be boosted sharply (watch AGRICULTURAL MARKETING for an upcoming report on what's happened in Los Angeles). Each year, the program has been extended and expanded.

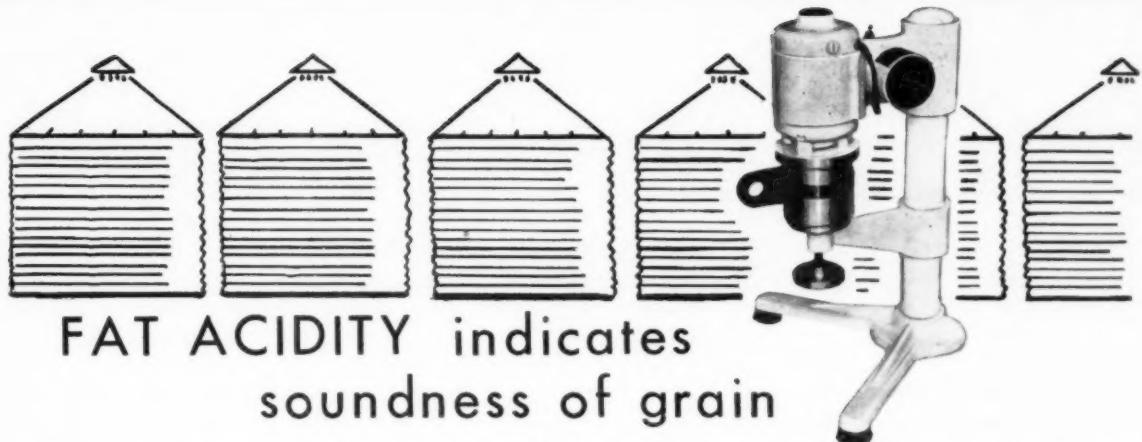
During the past school year, it has been continued in nonprofit public and private elementary and secondary schools. It has also been made available to nursery schools, child-care centers, settlement houses, and other such children's institutions.

And now, with summertime nearly here, many camps are planning to avail themselves of the program's benefits.

Milk marketing organizations, which, of course, have an interest in any extension of the special milk program, can do much to make the summer camp plan a success. One important way they can help is by spreading the word about the program to all camps and organizations eligible to take part in it.

Another way that dairymen and marketing agencies can help is to work out convenient timing of deliveries, arrangements for holding the milk, and systems for keeping it properly refrigerated.





## FAT ACIDITY indicates soundness of grain

**A**SIMPLE laboratory test taking only 10 minutes to perform can now determine the relative soundness of a lot of grain. It may also be used as an index of storage potential if the moisture content of the grain is known.

According to AMS research scientists M. H. Neustadt, Doris Baker, and Lawrence Zeleny, who developed the new method, tests are based on the free fatty acid content of stored grain.

Fatty acids are the result of chemical breakdowns that occur during deterioration of grain. They are easily measured, even in early stages of spoilage, and lend themselves well to testing procedures.

Fat acidity is defined as the number of milligrams of potassium hydroxide required to neutralize the free fatty acids in 100 grams of dry grain.

For determining fat acidity, researchers developed a grinder-extractor which simultaneously grinds the sample and extracts the fatty acids with benzene in only 5 minutes. In another 5 minutes, a technician can complete the determination. Eight such tests can be run in an hour.

The reliability of the fat acidity test has been pointed up in several preliminary studies. These have involved both damaged and sound grain. In almost every case, the amount of fatty acid provided a good indication of the grain's overall quality.

For example, Beltsville chemists tested 252 samples of corn classified according to "damaged kernels" and another 209 samples classified according to viability. The fat acidity increased rapidly with the decreasing commercial grade when "damaged kernels" was the grading factor and with loss of germination properties. Furthermore, these tests showed that fat acidity was an index of the early stages of spoilage.

Preliminary studies also included work with grains of several different degrees and types of damage. This

research involved determining the relationship between the degree of damage and fat acidity. Testing personnel obtained particularly good correlations for "sick" wheat, and for corn damaged by blue-eye mold, cob rot, or heat. Also included were wheat with blight, mold and scab, and wheat with frost damage.

Work with freshly harvested sound grain and other related commodities involved establishing fat acidity levels for each particular item. These levels stood as a dividing line. If the fat acidity for a particular type of grain fell above the predetermined limit, it meant the grain showed some deterioration. But if it came within the limits of the check, the grain was unquestionably of good quality.

A total of 1205 samples representing the 1951, 1952, and 1953 crops was obtained from agricultural experiment stations in 26 States and the general field headquarters of the Grain Division. Fat acidity tests were made immediately after the samples were received.

Eleven kinds of grains and related commodities were tested and fat acidity limits established below which the grain was of unquestionable soundness. In some instances, where the number of samples of a particular kind of grain were few, tentative fat acidity limits were set.

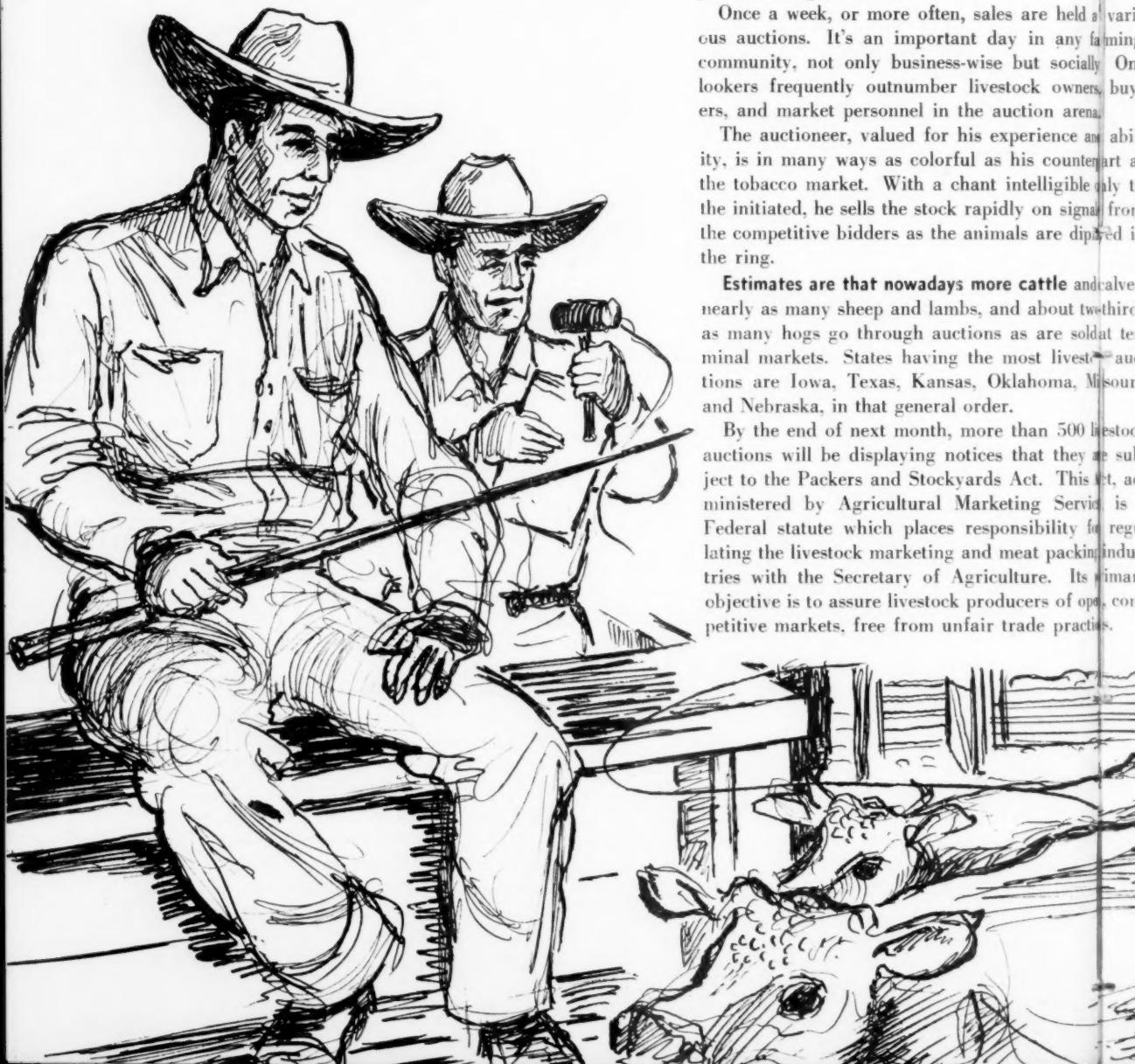
Having established the upper limits for sound grain and shown good correlations for some types of damage with fat acidity, the test should be a valuable tool for the grain industry. It gives a clue to the intrinsic quality of the grain which external factors, such as condition and damage, do not always reveal.

The fact that the fatty acid content of stored grain can easily be measured and tested—even by non-scientifically trained persons—adds to its value. Another asset, of course, is that fat acidity, once measured, can be used as an index of storage potential if the moisture content of the grain is also known.

# LIVESTOCK

## To The Highest Bidder

By Lee D. Sinclair



By the end of June, more than 500 livestock auctions will be posting notices that they are subject to the P & S Act. In common usage, the word "posted" means to "keep off." Not so when a livestock market is posted under the Act. Mr. Sinclair, Chief, Packer and Stockyards Branch of AMS, tells you why.

AUCTION selling and buying of livestock has had a rapid development in recent years. Today, there are about 2,400 livestock auctions in the United States. They range in volume of sales from a few dozen animals at a session to literally tens of thousands in a year at a single location.

Once a week, or more often, sales are held at various auctions. It's an important day in any farming community, not only business-wise but socially. Onlookers frequently outnumber livestock owners, buyers, and market personnel in the auction arena.

The auctioneer, valued for his experience and ability, is in many ways as colorful as his counterpart in the tobacco market. With a chant intelligible only to the initiated, he sells the stock rapidly on signals from the competitive bidders as the animals are driven into the ring.

Estimates are that nowadays more cattle and calves are sold at auction than any other type of marketing. Nearly as many sheep and lambs, and about two-thirds as many hogs go through auctions as are sold at terminal markets. States having the most livestock auctions are Iowa, Texas, Kansas, Oklahoma, Missouri and Nebraska, in that general order.

By the end of next month, more than 500 livestock auctions will be displaying notices that they are subject to the Packers and Stockyards Act. This Act, administered by Agricultural Marketing Service, is a Federal statute which places responsibility for regulating the livestock marketing and meat packing industries with the Secretary of Agriculture. Its primary objective is to assure livestock producers of open, competitive markets, free from unfair trade practices.

Increased Congressional appropriations have made it possible to post 200 auction markets during the current year. This speed-up is part of a 3-year program aimed at including all markets eligible for such action.

Most of the auctions covered this year are in Texas, Colorado, Louisiana, Arkansas, Missouri, and Iowa. If the program is continued, nearly a third of all livestock auctions in the U. S. should be displaying official Government posting notices by the end of next year.

**But not every auction market** is eligible for posting under the P & S Act. Many are below the minimum size requirement. To come under the Act, the pen space of the market must be at least 20,000 square feet in size, exclusive of runs, alleys, or passageways.

It must also be operated for compensation or profit as a public market. It must be involved in interstate commerce—that is, livestock offered for sale has been brought into the State, or livestock is sold for out-of-State shipment.

All scales used in weighing the livestock must be tested twice a year by a competent scale-testing agency in accordance with P & S Act regulations. The auction must be registered and bonded, and a schedule of tariffs or charges filed with USDA. Reasonable services and facilities for yarding, handling, and selling livestock must be provided for the charges assessed.

For administrative purposes under the P & S Act, the country is divided into 20 districts, each in the charge of a district supervisor. Most of these supervisors have farm backgrounds and are graduates of agricultural colleges. All know livestock and the intricacies of livestock marketing. All are widely known and respected in the livestock industry.

Their basic tenet is that the P & S Act was enacted by Congress in the interest of fair play between producers and the trade. Fundamentally, the Act and the regulations of the Secretary of Agriculture are a code of ethics in the livestock industry.

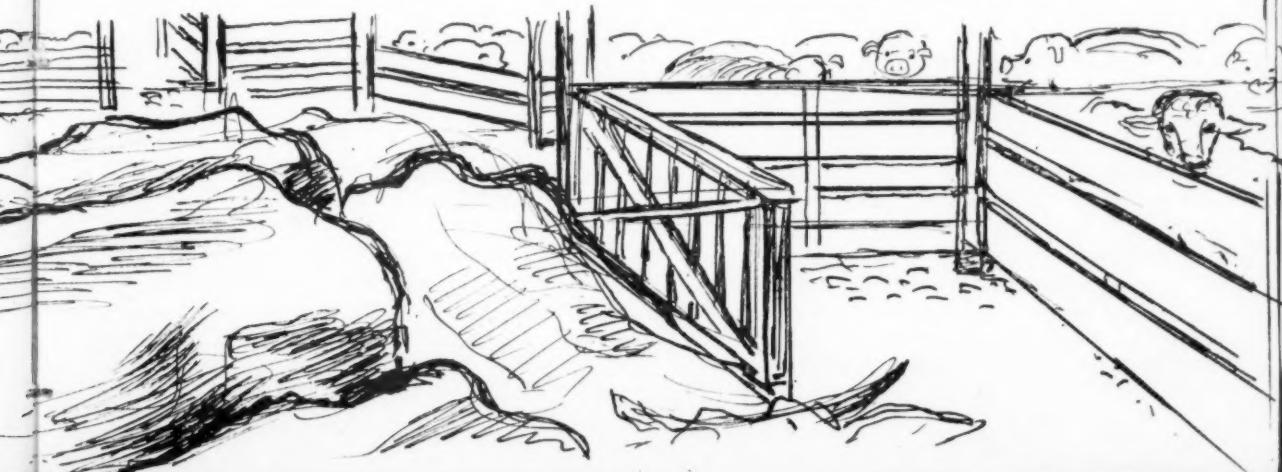
After a market has been posted under the P & S Act, all persons doing business as market agencies, dealers, or commission men must be registered and bonded. All must keep adequate records of their transactions and render true accountings to their principals. Accountings to consignor must include a description of the livestock, the species, weight, price per pound, total value, name of buyer, and the yardage, commission, and feed charges. Buyers on a commission basis must make a similar accounting, besides stating the amount of the commission. Accounting requirements also apply to dealers who buy or sell for their own account.

Auction markets which meet Government regulations have been subject to posting since the P & S Act was enacted in 1921. In those days, livestock auctions were few in number, but they increased rapidly during the 1930's and for a few years after World War II. The greatest increase in the size and importance of auctions, however, has occurred during the last ten years. Today, they play an important role in the marketing of cattle, hogs, sheep, and lambs.

**Minor violations of the Act** are, in most cases, settled by informal action. When disciplinary action is taken—in cases of fraud, false weights, or other serious abuses—the registrant may be ordered to correct this practice or he may have his registration suspended temporarily. The suspension prevents him from doing business at any market subject to the Act.

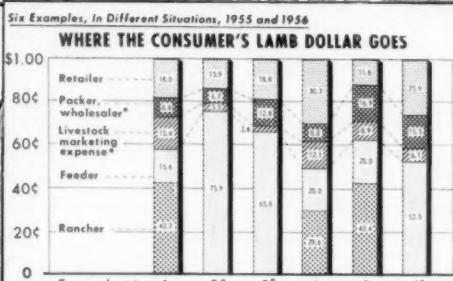
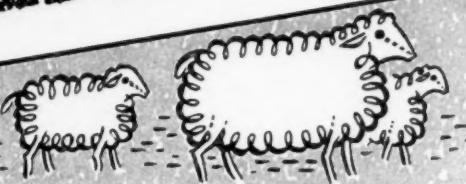
Currently, more and more auction market operators are seeking "posting" under the P & S Act. This procedure consists of actually posting at the yards three notices that the stockyards meet all requirements.

In common usage, the word "posted" means to "keep off." Not so when a livestock market is posted under the P & S Act. Posting of a livestock market is notification to all concerned that the market is a good place to do business, where producers, sellers, and buyers alike will get a fair shake.



# Trends in Marketing LAMB

By Victor B. Phillips



**M**EATS keep marching into our homes—taking the lead in our diet and food budget. Lamb, however, is losing step in the parade.

Last year, we consumed more meat than ever before, but we ate less lamb. While per capita red meat consumption climbed to over 164 pounds, lamb dropped to under 4½ pounds. Of the 1956 total, beef accounted for 84 pounds, pork 67 pounds, and veal 9 pounds. Consumption of poultry was near 30 pounds in 1956.

Per capita consumption of lamb has dropped almost 2½ pounds since the years immediately before World War II. All other meats—beef, veal, pork, and poultry—have exceeded prewar consumption levels.

Compared to beef and pork, lamb consumption has never been very high. It has varied considerably since 1900, ranging from 7.6 pounds in 1912 to 3.4 pounds in 1951. Lately, we have averaged between 3 and 5 pounds per person.

**Lamb consumption varies** from place to place in the U. S. Oddly, it is low in sheep-producing areas.

Consumption is greatest in the Middle Atlantic and Pacific sections of the country. It is least in the East South Central, South Central, and Mountain States.

A few States account for over 50 percent of the lamb consumed. In 1954, New York consumed 24 percent of the country's total and California 21 percent. Massachusetts, Pennsylvania, Illinois, and New Jersey are also important lamb-consuming States.

Massachusetts led the States in per capita consumption with 12.4 pounds in 1954. Mississippi consumed less than a quarter of a pound a person. Only 12 States and the District of Columbia consumed more than the country's average of 4.4 pounds.

**Consumption is high in cities** like San Francisco, Los Angeles, New York, Boston, and other eastern cities. This is because of the concentration of consumers who prefer Kosher meats and people of Eastern Mediterranean origin in these cities.

Consumption generally tends to be heavy in metropolitan areas. Lamb also tends to be popular among white-collar and professional workers.

Consumption is influenced by a number of things. For one, the sheep industry produces both meat and wool. The quantity of meat may be greatly influenced by the relative importance of wool to sheep producers. This was particularly true in 1951.

Early in our history, sheep were raised almost entirely for wool. Mutton became important later. More recently lamb has become the industry's major source of income. In 1955, wool accounted for about 37 percent of the income, and sheep and lambs 63 percent.

Another thing is that we don't have as many sheep as we used to have. There's been quite a drop from the World War II peak of 49 million head in 1942. In 1956 we had 27 million head, one of the lowest number since records were initiated in 1866.

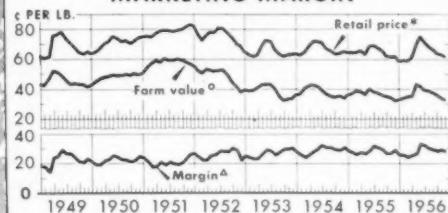
Decreases have been general throughout the country, but more pronounced in the Western States. Texas, the leading sheep State, has experienced a very sharp drop in sheep numbers.

The decline is attributed to several factors. There is a scarcity of sheep herders; labor costs have gone up; and returns from sheep have been low compared to other livestock. There have also been losses from predatory animals and reductions in grazing allotments on public land.

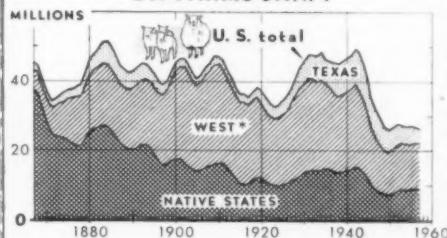


*U. S. Choice Grade Lamb*

### FARM AND RETAIL VALUES AND MARKETING MARGIN



### STOCK SHEEP AND LAMBS ON FARMS JAN. 1



Production is still greatest in the North Central States, Texas, and the West. It is less important along the eastern seaboard and in the South.

Since 1949, about 13 million lambs have been slaughtered each year. In 1951, however, only 10 million head were slaughtered. This caused the record low in per capita consumption during that year. Producers had found it advantageous to retain a large portion of their lamb crop because of advances in wool prices brought about by the Korean conflict. Slaughter is heaviest in California, Iowa, Nebraska.

The prices farmers and ranchers received for lambs increased sharply during 1950 and the first part of 1951. These prices started to drop rapidly later in 1951 and in 1952. Their decline in 1953 through 1956 was more gradual.

In 1949, Choice grade lamb had averaged around \$24 a hundredweight. The price climbed to around \$33 in 1951 before falling to about \$20 in 1956.

In terms of retail pounds, producers received 46 cents a pound for Choice lamb in 1949. This price rose to 58 cents a pound in 1951 before falling to 37 cents a pound in 1956.

On the other hand, retail lamb prices climbed sharply in 1949. They remained relatively stable during 1950 and 1951. They started to fall in 1952. However, there were month-to-month seasonal variations in prices.

Retail prices rose from 68 cents a pound in 1949 to 79 cents a pound in 1951. They dropped to where they averaged 65 cents a pound in 1956.

So the retail price averaged 4 cents a pound less in 1956 than in 1949, while farm prices were 9 cents a pound lower.

Of course, prices for retail cuts vary widely. In one city in 1956, loin chops were selling for \$1.19 a pound, while breast and flank were only 15 cents.

The marketing margin of lamb has widened since 1949. The margin is the difference between what the farmer is paid for live lamb and what the consumer pays for an equivalent quantity of retail cuts. The increase is due largely to higher costs of marketing. The costs of supplies, labor, equipment, transportation, and others have been going up.

In 1949, the marketing margin was 23 cents a pound. It climbed to 29 cents in 1954. It dropped to 28 cents in 1955 and 1956.

With the increased margin, the farmer's share of the consumer's lamb dollar dropped. It rose from 67 percent in 1949 to 74 percent in 1951, before dropping to 56 percent in 1954, and averaging 57 percent in 1955 and 1956.

We've been talking in terms of yearly averages. There are, however, variations in costs, prices, and returns to farmers, feeders, packers, wholesalers, and retailers. These people buy or sell live lambs or lamb carcasses at different times under different conditions.

This is illustrated (see chart) in 6 different situations recently studied by the Marketing Research Division, AMS. The research is designed to meet the need for information on farm-to-consumer price spreads.

Cost factors in providing marketing services are reflected in the marketing margins for lamb. The key to a reduction in lamb marketing margins lies principally in the efficient use of cost elements. That's why researchers are studying lamb marketing costs and ways to reduce these costs.



# 'Poly' Packed Cherries

## GAIN WIDE ACCEPTANCE

By Fisk Gerhardt

**M**ORE western sweet cherries will be reaching eastern markets with a fresher appearance and in a better condition this year. This is another result of marketing research by AMS.

A new polyethylene lug liner does the trick. Fruit sealed in these polyethylene liners can be held in cold storage for two weeks following harvest and still be shipped by regular freight to eastern markets in a completely acceptable condition.

In addition to a marked reduction in decay during transit and storage, the plastic liners preserve stem freshness and color brightness for longer periods of time under normal marketing conditions.

The new liner is quickly gaining industry-wide acceptance. Last year about 80 percent of the Pacific Northwest sweet cherry crop was packed in the new liner. Only about 16 carloads had been packed in film in 1955.

Although most of the cherry crop is still marketed in a faced pack, consumer acceptance of high quality cherries in a loose pack is increasing. This consumer acceptance has stimulated commercial interest in new packaging methods.

**Earlier tests had shown** that many synthetic films were not suited for use as sealed bag liners. Most of the films resulted in a high concentration of carbon dioxide and low levels of oxygen within the sealed liners. This impairs the natural flavor and appearance of sweet cherries.

Improvement of fruit condition and appearance results largely from reducing moisture loss and accumulating desirable amounts of carbon dioxide. Past studies have demonstrated that the addition of carbon

dioxide to the air surrounding sweet cherries helps preserve their bright red color. The problem lies in controlling the concentrations of both carbon dioxide and oxygen in the sealed liners.

Polyethylene film of 1.5 mil thickness seems to be the answer. Under refrigeration, cherries in poly-lined lugs are able to maintain the desirable levels of 6.5 percent carbon dioxide and 9 percent oxygen.

The same research shows, however, that the polyethylene liners must be opened if the lugs are removed from cold storage or refrigerated cars. At higher temperatures, carbon dioxide builds up in the sealed liners and results in rapid deterioration of the fruit.

**Research during the past year** has concentrated on the storage potential of poly-packed cherries, and gas retention ( $\text{CO}_2$  and  $\text{O}_2$ ) resulting from various types of closures for the polyethylene liners.

Closures and types of liners tested included poly bag liners with both twist and overlap seals; a special-type liner (on which a patent is now being sought) made by spot sealing the film at the bottom before inspection and overlapping afterwards; and a polyethylene-laminated paper liner sealed with overlap. Regular glassine paper liners were also included.

Desirable carbon dioxide and oxygen levels were maintained at 31° and 36° F. in both the regular and the special-type liner, regardless of the closure. The special-type liner also permitted researchers to open the top of the lug for inspection without damaging the liner. The poly-laminated paper liner was not gas-tight enough to build up 6.5 percent  $\text{CO}_2$ .

Researchers noted that the initial packing temperatures of the cherries did not materially influence the gas levels in the sealed liners during cold storage or refrigerated transit. This means it may be possible to place non-cooled fruit directly into sealed poly-packed lugs immediately following harvest, provided subsequent precooling is rapid and thorough.

To test the advantages of the polyethylene liners, the cherries were held at 36° F. for 10 days, then at 65° F. for 3 days to simulate normal transit and retail marketing conditions.

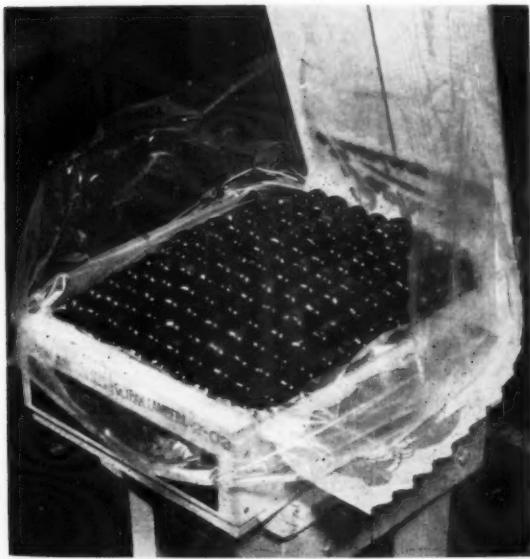
When removed from cold storage, those cherries packed in the normal glassine paper liners were darker in color, less firm, and showed pronounced shriveling and aging. They also had more decay than any of the lots packed in the polyethylene liners. In addition, cherries stored in the poly packs were definitely more crisp and retained better stem color.

After holding for an additional 3 days at 65° F., with the liners opened, fruit in the poly liners was much firmer, showed much less crown shriveling and had less decay than cherries in the paper liners.

Similar results showed up with fruit held at 31° F. for 14 days, 36° for 8 days, then 65° for 3 days. After these extreme storage and simulated transit and marketing conditions, the cherries in the standard packs were soft, severely pitted, visibly shriveled, and dark in color. The stems were brown and dry, and about 8 percent of the fruit showed serious decay.

In contrast, fruit in all of the poly packs was remarkably crisp, had a bright red and fresh appearance, with only a minor amount of surface pitting. It was also fairly free from decay.

Considerable savings in transportation costs are possible by the use of the polyethylene liners, since normal express service can be changed to less costly freight, and the use of dry ice as a source of CO<sub>2</sub> can be eliminated.



Special-type liner opened for inspection of double row facing.

## MARKETING RESEARCH PAYS OFF

More good quality California tomatoes are reaching the nation's markets today as a result of the adoption of an AMS-developed shipping procedure.

Marketing researchers found that decay and rot losses in California mature green tomatoes could be reduced materially if the tomatoes were shipped at a temperature range of 55° to 65° F. Previously, tomato shippers, transporting their crop at lower temperatures, had suffered losses as high as 25 percent.

The lower temperatures had furthered, rather than prevented, Alternaria rot, which develops while the tomatoes are in the ripening room. Too high transit temperatures favored other types of rot.

By basing the icing service on the temperature of the tomatoes at loading, an ideal temperature can be secured. Substantial savings in transportation charges and a much better quality of tomato resulted.

Most California tomatoes are now moving to market under the AMS-recommended method. Shippers in other parts of the country are also beginning to follow this procedure in transporting their green tomatoes.

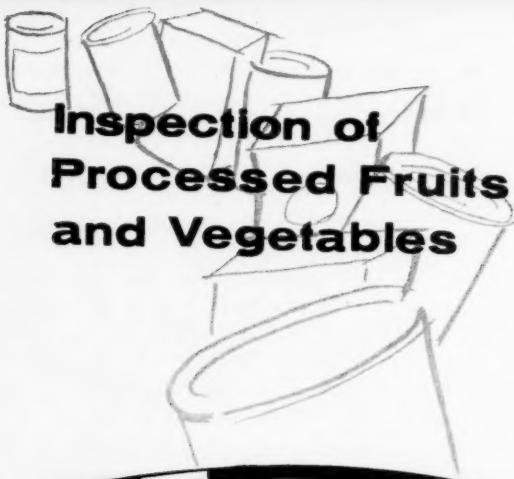
**Everyone knows of the convenience** and attractiveness of film bags used in prepackaging apples. But what isn't so well known is the fact that this prepackaging of apples at the point of production was largely developed by AMS marketing researchers.

A USDA contract with the Washington State Apple Commission provided for the experimental prepackaging of 25 carloads of Washington-grown apples in 1948-49.

Earlier attempts to package apples in cellophane had failed because the cellophane tore too easily. For the 1948-49 tests, rubber hydrochloride film was used. Seventy carloads were shipped that year and 132 carloads the next.

Then, polyethylene bags were tested. Apple growers and shippers now package and market thousands of carloads of apples each year in these film bags.

AMS researchers also developed a bagging device which tilts the apples gently into the bags. More than 4,000 bagging machines, patterned after the USDA device, have since been manufactured. They are also widely used for efficient packaging of onions, oranges, and similar products.



## Inspection of Processed Fruits and Vegetables



By Fitzhugh L. Southerland

To a distributor of processed fruits and vegetables, USDA inspection means that he can select—and be sure of receiving—the exact grade, size, and color of the product he desires for his trade.

By insisting that his purchase meet a definite Government grade, or a certain average score within the grade, he can maintain uniformity of quality.

To a processor, inspection is an aid in controlling product quality and in marketing his product.

Both of them may carry on their labels the grade designation and descriptive information contained in the U. S. standards upon which those grades are based.

The prefix U. S. on the grade designation, however, may be used only if the produce was packed under continuous inspection.

Whatever their needs, they can be sure they're getting what they want if the product has been inspected by USDA. Over 500 trained fruit and vegetable inspectors are at the service of the processor, distributor, the farmer, and the consumer.

Working under the Processed Products Standardization and Inspection Branch of the Fruit and Vegetable Division of AMS, these inspectors operate out of 32 inspection stations. Offices are located in the major producing areas, including Hawaii and Puerto Rico, and in many of the large receiving markets.

Three different types of inspection services are available to the industry—"continuous inspection," a "plant inspection-pack certification service," and inspection, by request, on individual lots.

A large volume of work is handled under "continuous inspection." This service provides for stationing an inspector, or as many inspectors as are necessary, at the processing plant during all shifts of the packing operation. The inspector checks the plant and equipment for sanitation. He observes the preparation of raw material and selects samples of the product at random during and after the processing and packing operations.

Each inspector issues daily reports to the plant management, summarizing his observations and including a probable grade for each lot of produce. When inspection of the finished products is completed, he issues certificates showing the final grade of each lot.

A product packed under this type of service may bear on its label the U.S. grade designation and a statement that the product was packed under the continuous inspection program of the U.S. Department of Agriculture. Such identification is optional, but many packers and distributors find this marking a valuable marketing aid.

Another type of inspection is the "plant inspection-pack certification service." Under this program, an inspector is assigned to the plant only during the processing and packing season to inspect and certify each lot of the product as it is packed. The inspector also observes the preparation of the raw material and the cleanliness of the plant. However, the inspector need not be present at all times during raw material preparation and processing operations as is required under continuous inspection.

A third inspection service is performed at the request of a person who is interested in finding out the grade of a particular lot of processed food. The in-

spector draws representative samples from the lot on which inspection is requested, either in the processor's plant or in a warehouse or storage. These are checked against the various requirements outlined in the standards.

When necessary, microscopic examinations and chemical and other analyses are made. Results of the inspection are reported on an official certificate which is issued to the applicant.

The inspection certificate for each of the three types of inspection shows the quality, condition, and grade of the product. It is usually attached to the invoice or shipping documents as evidence that the product complies with the quality requirements of the sales contract. It may also be used as evidence of the quality of the product for financially interested parties in negotiating sales.

Often, the certificate serves as an aid in making equitable settlements of disputes arising over claims for damage incurred in transit or in public storage. The certificate also, of course, provides information useful in labeling the product.

Basically, the inspection certificate is a valuable source of authoritative information for processors, sellers, brokers, distributors, and buyers as to the class, quality, and condition of the product with which they are dealing.

Currently, more than a third of the canned fruits and vegetables leaving processing plants around the country are packed under Government inspection. So is almost 80 percent of all frozen foods.

Dried products packed under inspection last year totaled more than 900,000,000 pounds and included all of the raisins and dates produced in California. Five and a half million pounds of dehydrated products, largely potatoes, as well as 300 million pounds of other processed foods also came under Federal inspection during 1956.

**At present, the inspection service** is being expanded to include fish products, especially frozen fried fish sticks for which standards were issued August 21, 1956. Five plants which process this product are now using the continuous inspection service. Inspection is also provided, when requested, for such items as scallops, fish cakes, fillets, shrimp, frozen prepared fish food products, and so forth.

To make inspection services available, AMS assesses and collects fees sufficient to cover the cost of the service rendered. Information about these fees may be obtained from any field office of the service, or by writing to Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C.



Inspector examines condition of fruit before it moves to bins.



The inspector is checking the cold wall blend tanks where concentrate is blended with fresh juice from the finisher.



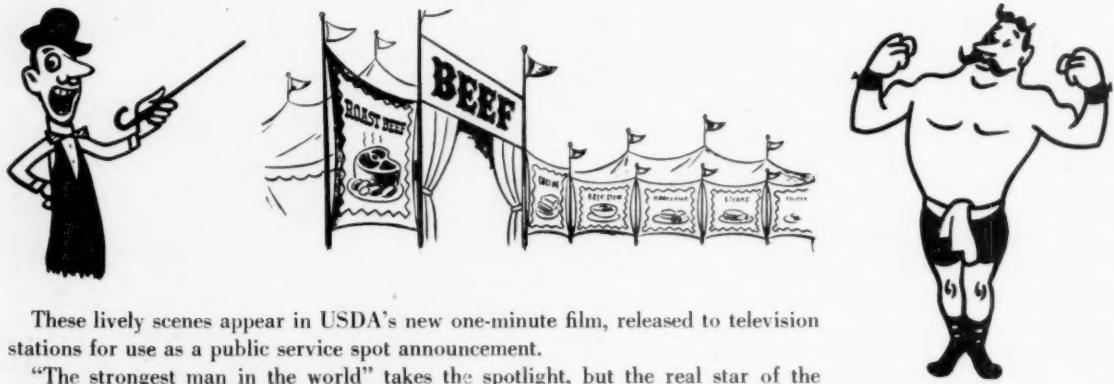
Here he is making a laboratory test on a canned frozen product to make sure it complies with the U. S. standards.

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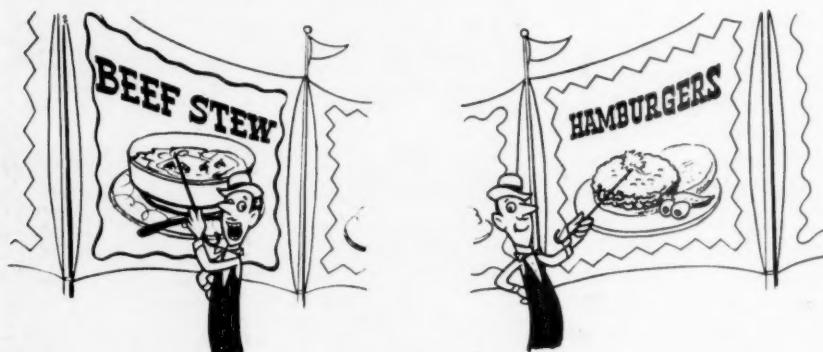
OFFICIAL BUSINESS

## NEW TV FILM ENCOURAGES BEEF CONSUMPTION



These lively scenes appear in USDA's new one-minute film, released to television stations for use as a public service spot announcement.

"The strongest man in the world" takes the spotlight, but the real star of the show is the barker, whose job is to encourage viewers to increase their consumption of beef while it is in plentiful supply.



Mr. Barker makes the most of beef's best points—its flavor, its body-building qualities, its use in many appetizing dishes, and the generous supplies currently available to consumers. The film was produced in support of the livestock industry's campaign to stimulate demand for beef.

USDA is cooperating through its Plentiful Foods Program.



